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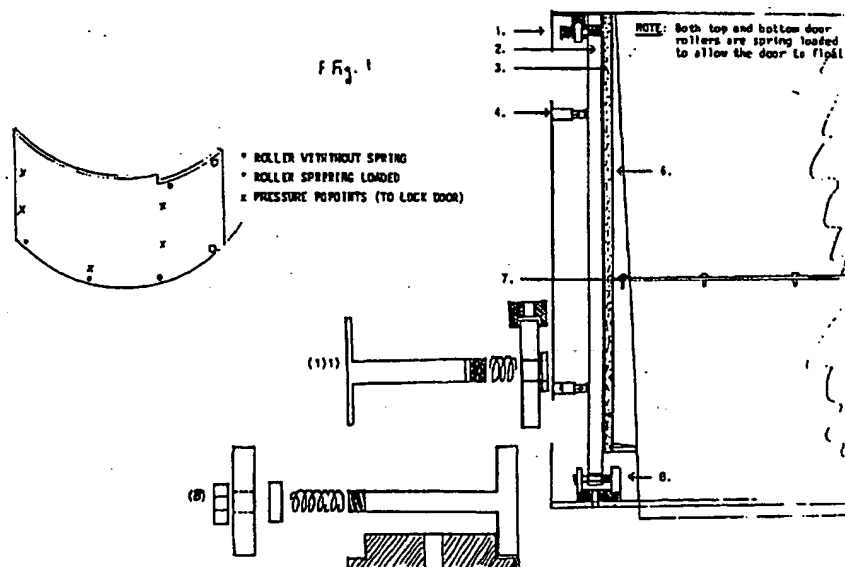
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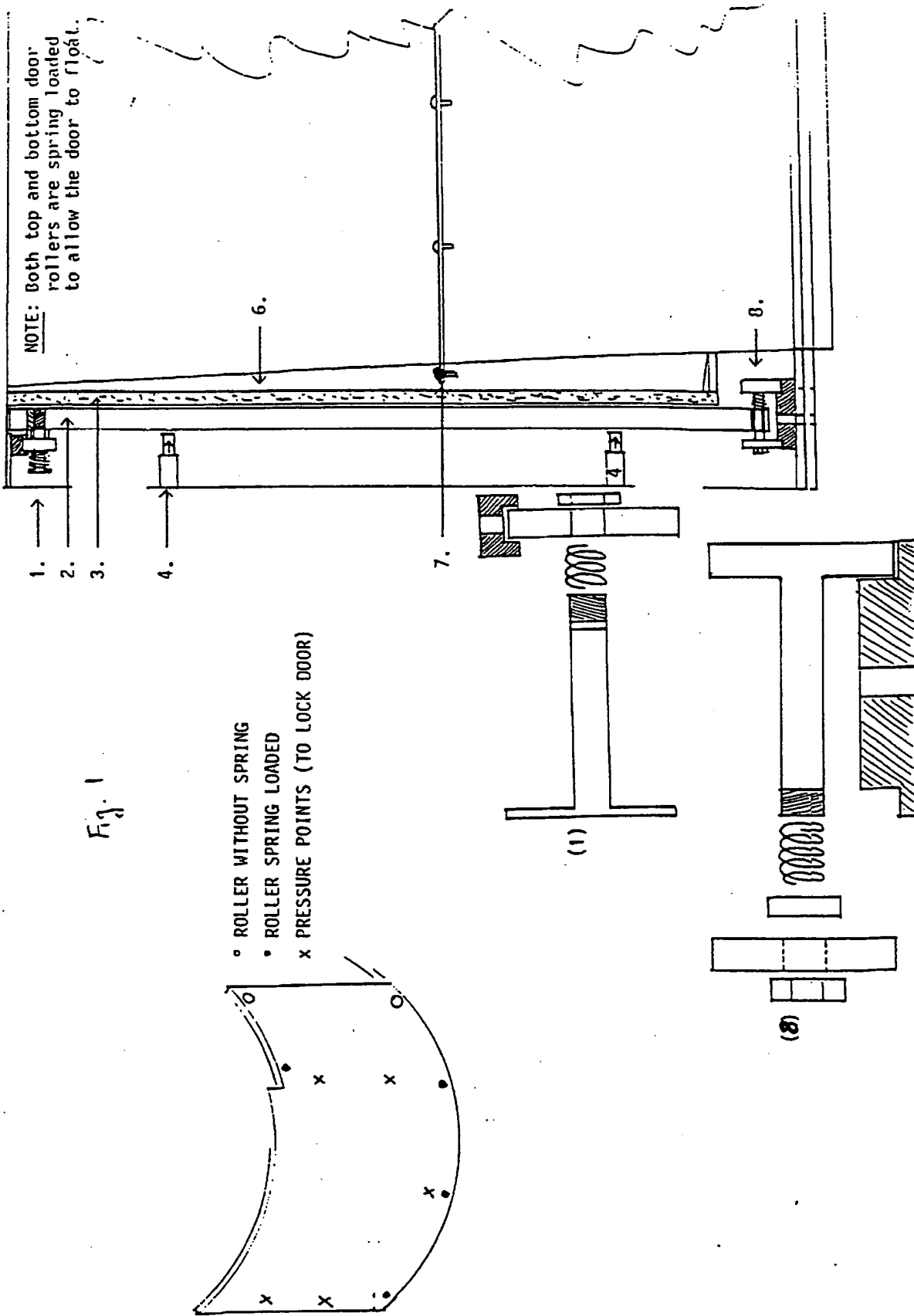
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(54) Abstract Title
Circular sliding door for a bath tub

(57) A circular sliding door for a bath tub comprises a door which will slide sideways in both directions and will move in a forward and backward direction, the circular sliding door has rollers which are positioned and fixed to the top and bottom of the circular sliding door, the rollers run on runners which are fixed to two separate panels which are located above the top roller and below the bottom roller, the roller wheels interlock with the runners which holds the circular sliding door in the correct working position, the rollers have springs which are fitted to the roller wheel shafts which act as return springs, the pressure of the return springs move the circular sliding door back and hold it in a backwards position away from the door seal which will allow the door the clearance to slide sideways, 4/5 hydraulic slave cylinders of 10 BAR pressure each are fixed to two panels which are located at the front right and left hand side of the circular sliding door, the hydraulic slave cylinders are activated by a hydraulic master cylinder which is positioned above the hydraulic slave cylinders to the right or left of the circular sliding door, when the hydraulic master cylinder activates the hydraulic slave cylinders the slave cylinder pistons move in a forward direction to make contact with the door and then to push the door in a forwards direction to make contact with the door seal and once contact is made the pressure increases to 40/50 BAR which makes a waterproof seal between the door seal and the circular sliding door, the hydraulic master cylinder is activated by a lever which is operated by hand.





Description

THE WATERPROOF CIRCULAR FLOATING DOOR - PRESSURE LOCKED.

APPLICATION: WATERPROOF DOOR FOR A DISABLED TUB BATH.

INTRODUCTION (USAGE).

The disabled tub bath will allow a person who is disabled who cannot use a normal bath to once again enjoy a bath, all they have to do is walk in and sit down and slide the door to the closed position, the door is then pressure locked by the user by pulling a small lever down which is positioned at the top of the tub bath, there is no effort needed at all. In the locked position the door is moved forwards to the door seal which is located at the entry point of the tub bath, we use 2/4 hydraulic slave cylinders with a pressure of 10 bar each, the door floats forwards on spring loaded rollers which slide on the runners located at the top and base of the tub bath, in the open position the spring pressure move the door away from the door seal to give the clearance required for the door to slide to the open position, the master cylinder is located at the top of the bath, we can also use air pressure, 2/4 small air pumps to move the door forwards but we only get 1,5 BAR pressure from each pump.

The disabled tub bath will be used in hospitals, old age peoples homes and in a domestic situation where one or both persons are disabled, and can be installed in a limited space, the actual tub bath splits in two to enable it to pass through doors and narrow passage ways, the two halves are joined together by the use of a flange and gasket, this forms a waterproof joint, the actual door seal holder is at an angle to provide the clearance require for the flange.

There are two tub baths on the maket place, one is French and the other British, the French tub has a door which slides upwards and removed in the open position, in the closed position the door slide down and is sealed by a pump which inflates the door seal against the door, the problem is that the inflated seal will burst and the user ends up with the room being flooded, the door is very hard to operate and a disabled person will have to have someone there to assist.

The British tub bath has a door which opens in the normal way, the door seal is located at the side on the entry to the tub, it is locked by the means of one (early model) or two leavers located on the inside of the door, the levers have to be moved towards the door, this forces the door on to the door seal to form a waterproom seal, the actual levers restrict the leg room inside of the tub bath in both the open and closed position and have sharp edges at the top of the levers, The seals also leak. The actual tub is only 700mm deep and is more of a hip bath, the costing are from 3895 to 4385 which is a lot of money for our old folks to find, the sliding door tub will be sold for under the i1800 price bracket and is 900mm deep, this will enable the user to really enjoy the bath, the seat in the British tub bath is fixed, our seat is adjustable for height and in the case of the very badly disabled the seat will move forwards to the entry point of the tub on a roller, this will enable the user to enter the tub.

The space required for the installation of the British bath is quite a lot because one has to allow for the space required for the door to open, this is where our sliding door is so far ahead, it requires no extra space to operate, the sliding door is 100% waterproof so in fact it is well ahead of anything on offer.

HOW THE DOOR'WORKS:

The circular waterproof floating sliding door bas spring loaded rollers located at the top and the base of the door, the rollers run on the door runners which are located at the top and the base of the tub bath, the rollers are inserted into the runners, this in turn will hold the door in position. When the user slides the door to the closed position the user operates a small lever at the top of the tub (master cylinder) this operates the 2/4 slave cylinders which in turn move the door forwards against the door seal to form a waterproof joint, when the lever at the top of the tub is moved to the open position the pressure is removed and the door will move away from the door seal with the assistance of the spring loaded rollers, this will clear the door seal to enable the user to slide the door to the open position, the top roller shaft is screwed into a sleeve fitted in the door, the bottom roller will slide in the sleeve fitted in the door, all materials used will be high quality steel, the springs will be made of spring steel, the runners will be fixed

to the tub with screws 6 inches apart, at the end of the runners there will be door stops located to prevent the door from coming off the runners. The hydraulic pipes will be run on the base of the tub and then up to the slave cylinders, heavy duty pipes will be used, the bleed screw will be located on the bottom O/S slave cylinder, the slave cylinders will be spring loaded.

The sliding waterproof door will be very easy to use and will form a 100% waterproof seal and will not leak which is far better than the other types of products on the market today, the price will be 60% cheaper and will benefit all of our old folk, it can also be sold all over the World.

THE DOOR SEAL AND DOOR SEAL HOLDER:

The door seal holder will be part of the top and bottom sections of the tub bath, the tub bath will be at an angle, this will enable the flange joint to clear the front of the seal holder, the top and the bottom sections are exactly 450mm high, making a total height of 900mm.

The door seal will be located at the front of the seal holder and will push fit into position, we will also use a heavy duty adhesive to secure the seal, the seal will be made at an angle of 45° and will fit on the face of the seal holder and will also fit on the inside of the seal holder, the bottom part of the seal will be at an angle of 15° to allow any water to drain back into the tub before the door is opened. The material that will be used will be neoprene, this will give the door seal a long period before it needs changing.

THE TERM 'FLOATING':

I use the term floating to describe the circular sliding waterproof door because of the ability of the door to move backwards and forwards on the spring loaded rollers, without the ability to do this there will be no possibility of the door and door seal making a 100% waterproof seal.

IN CONCLUSION:

Every year that goes by people get old, we see that there will be a great demand for this type of bath which will be easy to use and most of all 100% waterproof supplied at a price which everyone can afford, due to the high standards we will be offering a full 5 year guarantee, this is 4 years more than the other high cost British tub bath.

PATENT APPLIED FOR:

For the Circular sliding waterproof floating door which is pressure locked, included are the rollers, the door seal and the door seal holder constructed at an angle.

Many thanks.

Description of Drawings

Fig 1 1. Top roller and runner 2. Door 3. Door Seal 4. Slave Cylinder (IOBar) 6. Door seal holder at an angle to clear flange for joining top and bottom unit of tub.

7. Joining flange for top and base unit 8. Bottom roller and runner

Fig 2 1. Position when door is open 2. Position when door is closed or pushed against door seal to make it waterproof.

A. Door rollers which are spring loaded, in the open position the springs return the door to position (1) to clear the door seal.

B. Non spring loaded rollers, required to hold door in position.

C. Pressure points (10 Bar) which move door to position (2) to make contact with the door seal, this in turn makes a waterproof seal, the use of hydraulic or air pressure system will apply.

D. Optional additional pressure point.

E. Position of the door seal.

Fig 3 B1 Door stop
B2 Door runner
B3 Seat (adjustable)

B4 Locking control
B5 Sliding Floating Door
B6 Locking pressure points (4)
B7 Front entry step
BS Door seal
B9 Water waste
B10 Water taps B11 Spa option
B12 Wall firing
Fig 4
A1 Top unit
A2 Door seal
A3 Pressure points (locking to form seal)
A4 Flange to join top and bottom unit (tub)
A5 Bottom unit
A6 Adjustable seat
A7 Optional pressure locking point (10 bar)
AS Tub bottom panel and runner carrier
A9 Tub support panel
A10 Adjustable legs
All Seat fixing nuts
Fig 5 C1 Sleeve for top runner
C2 Door seal
C3 Door
C4 Slave pressure locking point C5 Door seal holder (angled)
C6 Bottom roller for door (spring loaded)
C7 Bottom runner for door

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Claims

CLAIMS:

THE CIRCULAR WATERPROOF FLOATING SLIDING DOOR - PRESSURE LOCKED.

The circular waterproof floating sliding door - pressure locked is quite unique because of the following features:

A. The shape of the door, it is circular and is only used in round tub baths.

B. The rollers used are spring loaded which enables the door to move forwards in the locked position towards the door seal to make a waterproof joint.

C. The ability of the door to move backwards in the open position to clear the door seal so that the user can slide the door open to get out of the tub bath.

D. The door is pressure locked by the use of a hydraulic master cylinder and 2/4 hydraulic slave cylinders, the user will move a lever to the locked position located at the top of the tub bath (master cylinder) this makes the slave cylinders move the door towards the door seal which is located at the entry point of the tub bath, the door and seal make contact and are pushed together thus making a waterproof joint.

E. The use of the special runners - the door rollers actually sink into, this in turn will hold the door in position to float backwards and forwards on the spring loaded rollers, this is where the term floating is used.

F. The ease of use which will benefit the disabled person using the tub bath, the door being 100% waterproof which means no leaks.

Amendments to the claims have been filed as follows

CLAIMS 1. A circular sliding door which will slide sideways in both directions and will move in a forward and backward direction, the circular sliding door has rollers which are positioned and fixed to the top and bottom of the circular sliding door, the rollers run on runners which are fixed to two separate panels which are located above the top roller and below the bottom roller, the roller wheels interlock with the runners which holds the circular sliding door in the correct working position, the rollers have springs which are fitted to the roller wheel shafts which act as return springs, the pressure of the return springs move the circular sliding door back and hold it in a backwards position away from the door seal which will allow the door the clearance to slide sideways, 4/5 hydraulic slave cylinders of 10 BAR pressure each are fixed to two panels which are located at the front right and left hand side of the circular sliding door, the hydraulic slave cylinders are activated by a hydraulic master cylinder which is positioned above the hydraulic slave cylinders to the right or left of the circular sliding door, when the hydraulic master cylinder activates the hydraulic slave cylinders the slave cylinder pistons move in a forward direction to make contact with the door and then to push the door in a forwards direction to make contact with the door seal and once contact is made the pressure increases to 40/50 BAR which makes a waterproof seal between the door seal and the circular sliding door, the hydraulic master cylinder is activated by a lever which is operated by hand.

2. A circular sliding door which moves in a forward and backward direction as claimed in claim 1 the backward movement is due to the return springs which are fitted to the roller wheel shafts which move the circular sliding door backwards and hold it in a backward position away from the door

seal, forward movement of the circular sliding door is due to the pressure applied to the door by the hydraulic slave cylinder pistons, the pistons move the circular sliding door forwards towards the door seal, the hydraulic slave cylinders are activated by the hydraulic master cylinder.

3. A circular sliding door that makes a waterproof seal with the door seal as claimed in claim 1 this is due to the pressure of the hydraulic slave cylinder pistons which press the circular sliding door against the door seal at a pressure of 40/50 BAR.

4. A circular sliding door as claimed in any preceding claim which is made from metal, plastic material or wood, or from a combination of these materials.

5. A circular sliding door substantially as herein described and illustrated in the accompanying drawings.

Description of Drawings

Fig 1 1. Top roller and runner 2. Door 3. Door Seal 4. Slave Cylinder (10Bar) 6. Door seal holder at an angle to clear flange for joining top and bottom unit of tub.

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B3 Seat (adjustable) B4 Locking control

B5 Sliding Floating Door B6 Locking pressure points (4) B7 Front entry step B8 Door seal B9 Water waste

B10 Water taps B11 Spa option

B12 Wall ring

Fig4

A1 Top unit

A2 Door seal

A3 Pressure points (locking to form seal)

A4 Flange to join top and bottom unit (tub)

A5 Bottom unit

A6 Adjustable seat

A7 Optional pressure locking point (10 bar) A8 Tub bottom panel and runner carrier

A9 Tub support panel

A10 Adjustable legs

All Seat filling nuts

Fig 5 C1 Sleeve for top runner

C2 Door seal

C3 Door

C4 Slave pressure locking point

C5 Door seal holder (angled)

C6 Bottom roller for door (spring loaded)

C7 Bottom runner for door